Abstract of the Disclosure

An apparatus and method for encoding audio data with a small amount of computation are provided. The audio data encoding apparatus includes: a time-to-frequency converting unit that receives a time domain audio signal and converts the same to a frequency domain audio signal; a spectral processor that performs spectral processing on the frequency domain audio signal; a masking threshold calculator that calculates an energy level for each frequency band of the frequency domain audio signal, approximates an energy distribution curve connecting the calculated energy levels to a distribution pattern similar to that of noise threshold levels calculated by a conventional psychoacoustic model, and calculates a scalefactor band gain for each band; and a quantization noise curve adjuster that adjusts a common gain to meet a target bit rate and matches a quantization noise curve to the approximated energy distribution curve while fixing the scalefactor gain for each frequency band.